CDN 3083-B100 & CDN 3083-B200 EFT / BURST COUPLING / DECOUPLING NETWORKS

USER MANUAL

601-336B

TESEQ

Advanced Test Solutions for EMC

CDN 3083-B100 & CDN 3083-B200 EFT / BURST COUPLING / DECOUPLING NETWORKS

USER MANUAL

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1 EXPLANATION OF THE SYMBOLS USED IN THIS MANUAL

Please take note of the following explanations of the symbols used in order to achieve the optimum benefit from this manual and to ensure safety during operation of the equipment.

The following symbol draws your attention to a circumstance where non-observation of the warning could lead to inconvenience or impairment in the performance.

Example:

This connection must not be confused with the main power input!

The following symbol draws your attention to a circumstance where non-observation of the warning could lead to component damage or danger to the operating personnel.

Example:

Never connect or disconnect while the system is performing a test!

Symbols used on the product:

Danger
high voltage

Protective earth
(earth terminal)

Attention
refer to manual

2 SAFETY ADVICE

The coupling decoupling networks CDN 3083-B100 and CDN 3083-B200 are intended for use with burst generators like Teseq's NSG 3025, NSG 2025, Modula, NSG 3040 and NSG 3060 series. These CDNs handle high voltage test pulses and AC / DC EUT supply voltages.

Improper or careless handling can be fatal!

Switch off EUT power supply before starting any manipulations on the screw terminals!

These operating instructions form an integral part of the equipment and must be available to the operating personnel at all times. All the safety instructions and advice notes are to be observed.

Keeping responsibility to the instructions and recommendations that follow is imperative.

The safety advice referring to the generator also applies when using the instruments together with the CDN 3083-B100 & B200.

Neither Teseq AG, Switzerland nor any of the associated sales organisations accept any responsibility for personal injury or for material or consequential damage that may result from irresponsible or negligent operation of this equipment.

The coupling devices are built in conformity with the IEC 61010-1:2001 safety standard and provide all the amenities for safe and reliable operation.

2.1 Safety measures

These operating instructions form an integral part of the instrument and must be studied carefully before putting the device into use. They must be available at all times to the operating personnel.

The instrument must only be used by trained personnel.

Persons fitted with a heart pacemaker must not operate the instrument and should not be in the vicinity of the test rig when pulses are triggered.

Arrange the working area in compliance with appropriate safety standards.

Connect the additional earth plug on the mains supply input side first!

The test rig must provide adequate insulation protection up to max. pulse voltage level of the generator (up to 8.8 kV). Particular care should be given to the connections between the CDN 3083-B100 & 200 and the equipment under test (EUT).

The pulse voltage must not be able to find its way to unearthed metal objects in the event of the EUT failing.

Never leave the instrument unattended when it is connected.

Do not open the instrument.

Long term and high-current tests need to be kept under observation.

The displayed temperature on the CDN 3083-B100 & 200 must not exceed 70°C.

However the temperature at the screwed terminals may be higher, this as a result of contact resistance between cable and terminal.

3 INTRODUCTION

High frequency pulse signals can result in cross-talk between conductors running in parallel even over short distances. This behaviour is taken into account in the latest and currently valid edition of the EFT/burst standard EN/IEC 61000-4-4 (2012).

Only the single coupling mode of «all conductors together against reference ground» is called for in interference immunity testing with fast transients. The units allow for test pulses of up to 8.8 kV.

The CDN 3083-B100 and the CDN 3083-B200 are designed to be used with an EUT supply in AC mode up to 690 V in line to line or line to ground method. DC voltage can be taken up to 1000 V line to line or line to ground.

The CDN 3083-B100 & B200 are 3-phase burst pulse coupling networks for large EUT currents. Although designed for continuous duty at up to 100 and 200 A per phase, the units can be subjected to considerably higher currents for short durations.

As a result, high inrush currents or pulse-shaped peak currents can be handled with ease. The current limitation is largely a matter of thermal loading and ambient temperature. A built-in thermometer enables the heating effect to be monitored.

The type of construction, inside a metal housing for use directly on the ground reference plane, ensures excellent HF earthing. The EUT supply connections take the form of generously dimensioned screw terminals.

The coupling network CDN 3083-B100 & B200 serves to inject fast transients (burst) up to 8.8 kV (5/50 ns – 50 Ω) into the supply to the device under test.

3.1 CDN 3083-B100

3.2 CDN 3083-B200

4 INSTALLATION

The instruments conform to the safety requirements, but with an increased leakage current given by the decoupling filter.

Operation without a protective earth connection is forbidden!

Operate the equipment only in dry and clean surroundings. Any condensation that occurs must be allowed to evaporate before putting the equipment into operation. Do not exceed the permissible ambient temperature or humidity given in the IEC specification.

Only handle the test rig or the device being tested when the EUT power supply is switched off and the generator's test sequence has been halted or aborted.

4.1 Installation of an EUT power switch

It is recommended to connect the CDN 3083-B100 & B200 through a properly rated power switch device, which should be located close to the test setup. In order to ensure an easy and quick acces to the EUT power, the switch should be clearly and visibly labelled as a device for «EUT power on / off» switching.

The inhouse power distribution needs to be equipped with a proper circuit breaker and an emergency off button as per IEC 61010-1.

The test setup should only be accessible to trained persons.

4.2 Leakage current

Local installation regulations must be respected to ensure the safe flow of leakage currents.

Use only nationally approved connectors and accessory items.

Ensure that a reliable return path for the interference current is provided between the EUT and the coupling network. The reference ground plane and the earth connections to the instruments as described in the relevant test standards serve this purpose well.

4.3 EUT supply protection

Dimensioning of EUT supply and rating of fuse protection (AC or DC), must conform with National prescriptions and EUT requirements. An inappropriate arrangement, mounting, cabling and/or handling of the device under test or the protective elements can make the protective features that are incorporated in the concept of the device worthless.

5 CIRCUIT DIAGRAM

Block diagram of the CDN 3083-B100 & 200

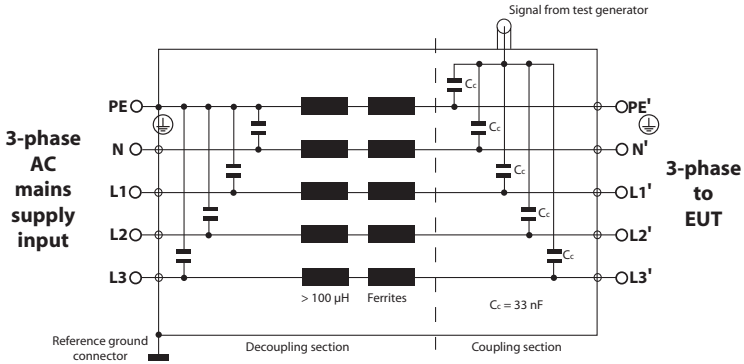


Diagramm of connection with 3-phase AC main supply

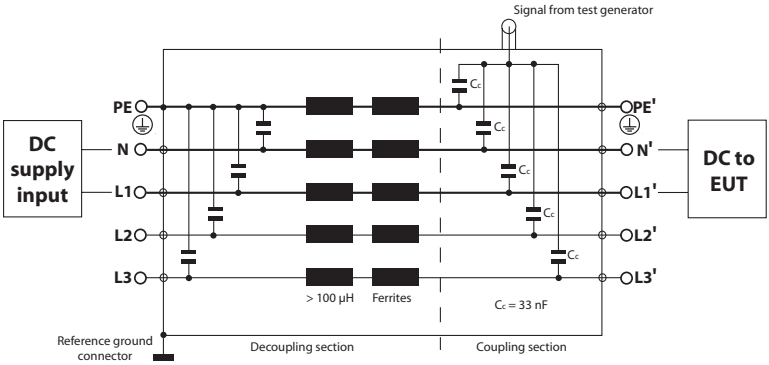


Diagramm of connection with DC supply

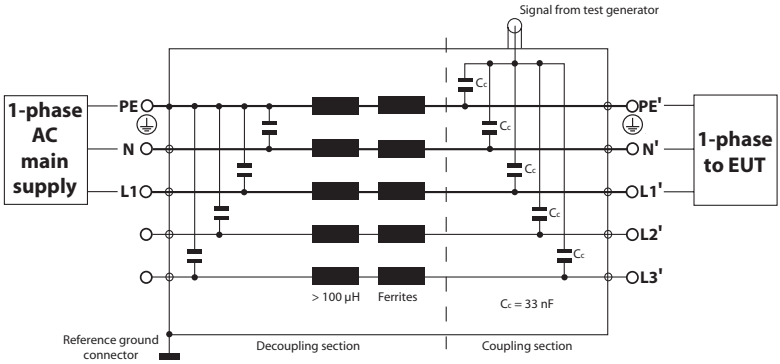


Diagramm of connection with 1-phase AC main supply

6 OPERATION

6.1 EUT power supply

The power is fed in via a 5-core cable usually brought out as:

Color	3-phase AC	1-phase AC*	DC*
brown	L1	phase (L)	positive (+)
black	L2		
black	L3		
blue	N	neutral (N)	negative (-)
green/yellow	PE	ground (PE)	PE

* Note: For 1-phase or DC application it is possible to use the input channels in parallel, thus it is possible to increase the max. EUT current.

Care has to be taken for 1-phase or DC application to prevent the risk of electrical shock through unused channels (screwed connectors). It is recommended to screw the safety banana plug adapters (INA 163) on the unused connectors.

The screwed terminals are made for a maximum strengthen torque of 8 Nm.

6.1.1 Earth connection

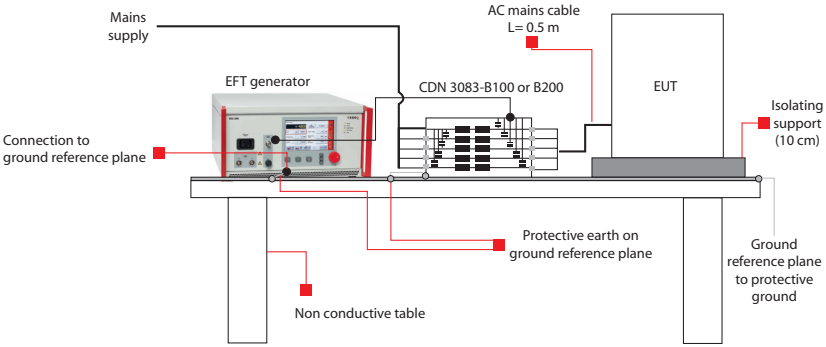
The earth connection lug on the power supply input serves to ensure a good connection to the protective earth on the test rig.

6.2 Test rig

Every test rig must be planned carefully. All the instrumentation should be readily accessible and rigidly positioned.

The preceding safety measures are to be observed. The test object may only be handled when the instruments and mains are switched off.

The whole test setup should be supplied from the same mains connection in order to prevent an uncontrolled flow of pulse current in other parts of the system. Installation in a Faraday cage ensures that non-associated items and equipment are not disrupted by pulses radiated from the cabling or the device under test. Connections to the EUT must be of low impedance and be made with high contact pressure otherwise welding or arcing might occur at the contact points.



Example of a system configuration with the NSG 3040.

Please refer to IEC 61000-4-4 and respective product standards for the various test setups.

6.3 Operation of the instruments

It is assumed that the test rig has been set up in accordance with the preceding notes and that the device to be tested has been connected taking the relevant safety measures into account.

Only handle the test rig or the device being tested when the EUT power supply is switched off and the generator's test sequence has been halted or aborted.

It is possible to overstress the CDN 3083-B100 & B200 for a certain time. However, attention has to be given to the heat control placed on the CDN 3083-B100 or B200.

The displayed temperature on the CDN 3083-B100 & 200 must not exceed 70°C.

However the temperature at the screwed terminals may be higher, this as a result of contact resistance between cable and terminal.

CDN 3083-B100 & CDN 3083-B200 EFT/burst coupling/decoupling networks

7 ACCESSORIES

7.1 Connectors for reduced current application INA 163 (max. 32 A) (optional)

In case, an EUT needs to be exchanged frequently, the optional safety banana plug set INA 163 gives the possibility to connect the EUT in an easy and safe way. With this option the max. current consumption of the EUT must not exceed 32 A.

INA 163 safety banana plug adapter set

7.2 Pulse measurement adapter INA 3243 (optional)

The measurement adapter INA 3241 is necessary to measure the Burst/EFT pulse at output terminals.

INA 3243 measuring adapter

The measurement or the verification of the CDN has to be done with a switched off and disconnected power supply.

Pulses can then be observed at the output connectors by means of an oscilloscope.

7.3 Burst / EFT Pulse Verification Kit CAS 3025 (optional)

To fulfil the EN / IEC 61000-4-4 standard recommendation, each line needs to be measured separately, terminated with 50 Ω. For this purpose the terminator / attenuator INA 265A (which is part of the CAS 3025 calibration set) is recommended.

7.4 Isolated allen Key INA 3005 (included)

7.5 EFT Cable INA 3008 (included)

7.6 Single SHV plug INA 6546 (optional)

Single SHV plug for custom made cables to connect with any EFT generator.

8 MAINTENANCE

Maintenance is limited to cleaning and eventually removal of any foreign particles or objects from the contact surfaces since such matter can adversely affect the test parameters. The housing can be cleaned with a moist cloth with optionaly just a trace of liquid detergent.

Other solvents are not permitted.

The thermometer can be removed and may be replaced in case of damage. It can be pulled out of his fixture by hand.

The CDN 3083-B100 & B200 are fully potted, so there are no serviceable parts internally.

9 WARRANTY

Teseq grants a warranty of 24 months against material and manufacturing defects. Excepted from this warranty are damages incurred during transportation, damages caused through use of the equipment for unforeseen purposes and the effects of excessive physical force.

10 TECHNICAL SPECIFICATIONS

EUT (supply) voltage:	690 VAC, line-to-line and line-to-ground 1000 VDC, line-to-line and line-to-ground
EUT current (AC or DC):	≥100 A continuous (for – B100) and >200 A continuous (for –B200) The maximum permissible current is given by the heat dissipated in the coupler. As the temperature is monitored, heavy overloads until the temperature reaches 70°C are possible.
Burst pulse peak voltage:	8800 V
Terminals:	Screw terminals, rated for 200 A
Temperature monitoring:	Bimetal-thermometer 0 to +120° C
Grounding:	4 mm combined banana and screw terminal (safety grounding). Via housing bottom plate and brackets (HF ground to test setup ground-plane)
Size:	410 x 170 x 190 mm (-B100) 430 x 310 x 190 mm (-B200)
Weight:	5 kg (-B100), 11 kg (- B200) approx.
EFT/burst connector:	SHV
Temperatur range:	Operation at +10 to +40° C Storage at -10 to +60° C
Humidity:	30 to 78% (non condensing)
Air pressure:	860 to 1060 hPa

11 ORDERING INFORMATION

11.1 Accessories (included)

Type	Description
INA 3005	Isolated Allen Key
INA 3008	Coax connection cable 0,8 m (SHV – SHV) to burst generator
User manual	
Calibration certificate	

11.2 Options

INA 163	Safety banana plug set (10 pcs.), 6 to 4 mm
INA 3243	Pulse measurement adapter
CAS 3025	Burst / EFT Pulse Verification Kit
INA 6546	Single SHV plug for custom made cables

12 DECLARATION OF CONFORMITY (CE)

TESEQ
Advanced Test Solutions for EMC

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Declaration of conformity

CE

Manufacturer:	Teseq AG
Address:	Nordstrasse 11F, 4542 Luterbach, Switzerland
	declares that the following product
Product:	CDN 3083-B100 EFT/Burst Coupling Decoupling Network
Options:	all
	conforms to the following Directives and Regulations
	EMC Directive 2004/108/EEC LVD Directive 2006/95/EEC
Generic standards:	EN61326-1, 2005 EN61326-2-1, 2005 EN61010-1, 2001
	The relevant technical file is available for inspection:
Technical file:	N° EMC_CDN3083-B100_2012/ LVD_CDN3083-B100_2012 Teseq AG CH - 4542 Luterbach

The purpose of this instrument is the generation of defined interference signals for EMI immunity testing. Depending on the arrangement of the test rig, the configuration, the cabling and the properties of the EUT itself, a significant amount of electromagnetic radiation may result that could also affect other equipment and systems. The user himself or herself is ultimately responsible for the correct and controlled operation of the rig. In case of doubt, the tests should be carried out in a Faraday cage.

European representative:	Teseq AG, Nordstrasse 11F, 4542 Luterbach, Switzerland
Place and Date:	Luterbach, March, 19, 2012

Johannes Schmid
President

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Declaration of conformity

CE

Manufacturer:	Teseq AG
Address:	Nordstrasse 11F, 4542 Luterbach, Switzerland
	declares that the following product
Product:	CDN 3083-B200 EFT/Burst Coupling Decoupling Network
Options:	all
	conforms to the following Directives and Regulations
	EMC Directive 2004/108/EEC LVD Directive 2006/95/EEC
Generic standards:	EN61326-1, 2005 EN61326-2-1, 2005 EN61010-1, 2001
	The relevant technical file is available for inspection:
Technical file:	N° EMC_CDN3083-B200_2012/ LVD_CDN3083-B200_2012 Teseq AG CH - 4542 Luterbach

The purpose of this instrument is the generation of defined interference signals for EMI immunity testing. Depending on the arrangement of the test rig, the configuration, the cabling and the properties of the EUT itself, a significant amount of electromagnetic radiation may result that could also affect other equipment and systems. The user himself or herself is ultimately responsible for the correct and controlled operation of the rig. In case of doubt, the tests should be carried out in a Faraday cage.

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Place and Date:	Luterbach, March, 15, 2012

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